<110> AKZO Nobel N.V.

<120> Babesia canis vaccine

<130> Bccvirvaccine

<140>
<141>

<160> 10

<170> PatentIn Ver. 2.1

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<212> DNA
<213> Babesia canis

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            Met Glu Ser Thr Ser Thr Thr Thr Asn Phe Val Ala
             1   5   10

gag aac cgt ccc acc ttt ggt gag acg ttt gat gtg atg agg gaa gct   158
Glu Asn Arg Pro Thr Phe Gly Glu Thr Phe Asp Val Met Arg Glu Ala
         15   20   25

ttg ctt cgt gta aag tcc tct gaa cgt ttg gca atg ttg aga gcg ctt   206
Leu Leu Arg Val Lys Ser Ser Glu Arg Leu Ala Met Leu Arg Ala Leu
     30   35   40

gca gga atg tgc ggt cac cgc gtc ctt cct ggc act ggt gct tct gcg   254
Ala Gly Met Cys Gly His Arg Val Leu Pro Gly Thr Gly Ala Ser Ala
  45   50   55   60

gta ttt gta acg gta cct cct aag gga act tcg ata aag ctt aaa cca   302

Pro Arg Pro Gln Ser Thr Lys Ser Pro Glu Leu Arg Glu Leu Ser Arg
            80   85   90

aag att cgc gaa atg aat aag act ata agt cag gaa tca gct cgg gta   398
Lys Ile Arg Glu Met Asn Lys Thr Ile Ser Gln Glu Ser Ala Arg Val
            95   100   105

aac cac cgg ttg ccg gaa ggc cac cct ctc tta gag aag cgg gca gaa   446
Asn His Arg Leu Pro Glu Gly His Pro Leu Leu Glu Lys Arg Ala Glu
        110   115   120

tat ttt cgt cac ctt aga tct ctt aag agc caa gga gtc aat aga ctc   494
Tyr Phe Arg His Leu Arg Ser Leu Lys Ser Gln Gly Val Asn Arg Leu
125   130   135   140

atc taa gaaggcacta cgtaggtacc gtgcctctat gaggaatacg aaccgactag   550
Ile

tgcacaatag acgaccagtt ctaccaaagg tagagcctga ctctaatcta ccattcggcc   610

agcgacggag tcgcatgaca acgtggaatc ttagaccacg ccggacgggt tatccgtcaa   670

atggtacttt ggcagttacg gaactcctga tctcgattta tagatcaaac ttctacacct   730

tgaaggtggt cgaggaaggg agatgtacgt gctgcaacac ccataaggag caagctttgc   790

tactcctatc cggttacctc cagctatatc gtgcactgca ctcagttgga aggtctgtat   850

tcgtagaata ctgcaaaacc aggatatgcg tcgaggcacg cctcaccgga ctacgtccga   910

gggtgaccct aacgggctgc tgaactaggt tcagccagcg cttcctgtga gtatgtcatt   970

ccgggtcctt cggggcccgg gccagtttcg actggtgtag gtttgcccta ctagagtact   1030

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catcatct tctattaaa aataaaaaa aaaaaaaaa tcgat   1135

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Gly His Arg Val Leu Pro Gly Thr Gly Ala Ser Ala Ile Ala Ala Thr
    50                  55                  60

Val Thr Pro Lys Gly Ala Ser Met Lys Leu Lys Pro Pro Arg Pro Gln
 65                  70                  75                  80

Ser Thr Lys Ser Pro Glu Leu Arg Glu Leu Ser Arg Lys Ile Arg Glu
                85                  90                  95

Met Asn Lys Thr Ile Ser Gln Glu Ser Ala Arg Val Asn His Arg Leu
            100                 105                 110

Pro Glu Gly His Pro Leu Leu Glu Lys Arg Ala Glu Tyr Phe Arg His
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Leu Arg Ser Leu Lys Ser Gln Gly Val Asn Arg Leu Ile
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                 1                   5                   10
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aaa aat aga aaa aga aga ttt agt aag aca ttt gat gtt atg aga gaa gct   161
Lys Asn Arg Lys Arg Arg Phe Ser Lys Thr Phe Asp Val Met Arg Glu Ala
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gca gga atg tgc ggt cac cgc gtc ctt cct ggc act ggt gct tct gcg    254
Ala Gly Met Cys Gly His Arg Val Leu Pro Gly Thr Gly Ala Ser Ala
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ata gcg gca acg gta acc cca aag ggg gct tcg atg aag ctt aaa cca    302
Ile Ala Ala Thr Val Thr Pro Lys Gly Ala Ser Met Lys Leu Lys Pro
                    65                  70                  75

ccg cgt ccg cag tca acg aag tct ccg gag ctc agg gag ctg tca cgg    350
Pro Arg Pro Gln Ser Thr Lys Ser Pro Glu Leu Arg Glu Leu Ser Arg
                80                  85                  90

aag att cgc gaa atg aat aag act ata agt cag gaa tca gct cgg gta    398
Lys Ile Arg Glu Met Asn Lys Thr Ile Ser Gln Glu Ser Ala Arg Val
            95                  100                 105

aac cac cgg ttg ccg gaa ggc cac cct ctc tta gag aag cgg gca gaa    446
Asn His Arg Leu Pro Glu Gly His Pro Leu Leu Glu Lys Arg Ala Glu
        110                 115                 120

tat ttc gtc acc tta gat ctc tta aga gcc aag gag tca ata gac tca    494
Tyr Phe Val Thr Leu Asp Leu Leu Arg Ala Lys Glu Ser Ile Asp Ser
125                 130                 135                 140

tct aag aag gca cta cgt agg tac cgt gcc tct atg agg aat acg aac    542
Ser Lys Lys Ala Leu Arg Arg Tyr Arg Ala Ser Met Arg Asn Thr Asn
                    145                 150                 155

cga cta gtg cac aat aga cga cca gtt cta cca aag gta gag cct gac    590
Arg Leu Val His Asn Arg Arg Pro Val Leu Pro Lys Val Glu Pro Asp
                160                 165                 170

tct aat cta cca ttc gac caa cga cgg agt cgc atg aca acg tgg aat    638
Tyr Asn Leu Pro Ile Gly His Arg Arg Ser Arg Met Thr Thr Trp Asn
                175                 180                 185

att aga cca cac gag acg gtt tat ccg tca aat ggc act tta gca gtt    686
Leu Arg Pro Arg Arg Thr Gly Tyr Pro Ser Asn Gly Thr Leu Ala Val
        190                 195                 200

acg gaa ctc ccg gtc tcg att tat aga tca aac ttc tac acc ttg aag    734
Met Glu Leu Pro Val Ser Ile Tyr Arg Ser Asn Phe Tyr Thr Leu Lys
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gct ttg cta ctc cta tcc ggt tac ctc cag cta tat cgt gca ctg cac    830
Ala Leu Leu Leu Leu Ser Gly Tyr Leu Gln Leu Tyr Arg Ala Leu His
        240                 245                 250

tca gtt gga agg tct gta ttc gta gaa tac tgc aaa acc agg ata tgc    878
Ser Val Gly Arg Ser Val Phe Val Glu Tyr Cys Lys Thr Arg Ile Cys
        255                 260                 265

gtc gag gca cgc ctc acc gga cta cgt ccg agg gtg acc cta acg ggc    926
Val Glu Ala Arg Leu Thr Gly Leu Arg Pro Arg Val Thr Leu Thr Gly
        270                 275                 280

tgc tgaactaggt tcagccagcg cttcctgtga gtatgtcatt ccgggtcctt        979
Cys
285

cggggcccgg gccagttttg actggtgtag gtttgcccta ctagagtact tgcgacgccg  1039

aagcgcctcc gttcaaaaga acgcgcaagc cctagcagag aaatgcgagg gcatgactct  1099

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Lys Ser Ser Glu Arg Leu Ala Met Leu Arg Ala Leu Ala Gly Met Cys
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Gly His Arg Val Leu Pro Gly Thr Gly Ala Ser Ala Ile Ala Ala Thr
        50                  55                  60

                          Lys Ala Cys Met Lys Leu Lys Pro Pro Arg Pro Gln
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Met Asn Lys Thr Ile Ser Gln Glu Ser Ala Arg Val Asn His Arg Leu
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Pro Glu Gly His Pro Leu Leu Glu Lys Arg Ala Glu Tyr Phe Val Thr
          115   120   125

Leu Asp Leu Leu Arg Ala Lys Glu Ser Ile Asp Ser Ser Lys Lys Ala
          130   135   140

Leu Arg Arg Tyr Arg Ala Ser Met Arg Asn Thr Asn Arg Leu Val His
145   150   155   160

Asn Arg Arg Pro Val Leu Pro Lys Val Glu Pro Asp Ser Asn Leu Pro
                    165   170   175

Phe Gly Gln Arg Arg Ser Arg Met Thr Thr Trp Asn Leu Arg Pro Arg
                    180   185   190

Arg Thr Gly Tyr Pro Ser Asn Gly Thr Leu Ala Val Thr Glu Leu Leu
                    195   200   205

Ile Ser Ile Tyr Arg Ser Asn Phe Tyr Thr Leu Lys Val Val Glu Glu
          210   215   220

Gly Arg Cys Thr Cys Cys Asn Thr His Lys Glu Gln Ala Leu Leu Leu
225   230   235   240

Leu Ser Gly Tyr Leu Gln Leu Tyr Arg Ala Leu His Ser Val Gly Arg
                    245   250   255

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Leu Thr Gly Leu Arg Pro Arg Val Thr Leu Thr Gly Cys

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